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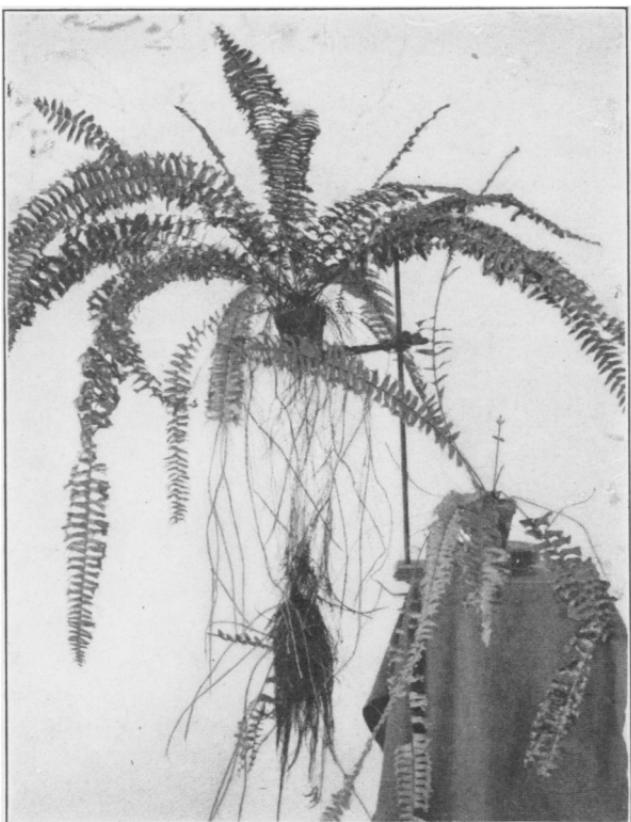
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Nephrolepis nutrition.

R. C. BENEDICT.

The photograph accompanying this article illustrates in an interesting way the roundabout method employed by Nephrolepis species in getting their food supply. Two plants of a fish tail variety of Boston fern, *N. bostoniensis Gretnai*, are shown, both the same age and in the same size three inch pots. Both were grown close

to each other at the Brooklyn Botanic Garden and had the same amount of light and warmth.

Note, however, the remarkable difference in size and general vigor. The plant shown at the right has produced seven or eight fair sized leaves and a few of the slender rhizomes or stolons by which *Nephrolepis* spreads and propagates itself vegetatively. On the other hand, the plant at the left and above has between thirty and forty much larger leaves and a large number of vigorous branching stolons.

In connection with these stolons is a large mass of roots with a few leaves showing. Herein lies the difference in the size and growth of the two original plants. Both started out the same size, but the one on the left happened to send out one or more stolons so that these projected into a tank of water underneath. These straightway gave rise to roots and through them an increased amount of water and dissolved mineral matter was sent up and back to the parent plant in the pot. More food meant more leaves, and with each new leaf, a new stolon sent out to find the rich source of food below.

The progression is geometric at least. The other plant whose root development was confined to the limits of the three inch pot could receive only the amount of water obtainable from the small quantity of soil in the pot. It would not do to stand such a pot in water, for then the roots would not obtain sufficient air, the soil would become heavy and ferment with the organic matter in it, and the plant would die rather quickly. But with the other plant, the pot and soil give it its mechanical support, the numerous stolons together with the leaves serve as breathing organs, and the mass of roots formed in the water absorb as much food as the leaves are able to utilize. An interesting fact in connection with the root system of *Nephrolepis* may be

noted here. The main stem axis does not produce roots. These are all developed as outgrowths of the stolons, one of which is given off in connection with each leaf on the main axis. These stolons spread laterally and tend to penetrate the soil. In moist conditions, they give off fibrous roots, and, through these, obtain for the plant necessary water and dissolved mineral matter. In addition, they may also develop buds and new stem axes, and so give rise to new plants. In fact, this is the regular method of reproduction.

To those of us who like to keep a plant of the Boston fern as a house pet,—and it is the commonest house plant in the country,—there is a practical application. Ordinarily, it is necessary to repot Boston ferns rather frequently, preferably in the spring. In a vigorously growing plant, each repotting means a larger pot, and the limit of house culture is reached rather soon. If, however, a source of water can be supplied without standing the pot in the water, it should be possible to maintain a Boston fern plant more or less indefinitely in a smaller pot, by allowing the stolons to reach into a constant supply of water. The simplest method of arranging for this is perhaps to support the pot some inches above the bottom of a fairly deep jardiniere, and to keep the bottom of the jardiniere filled with water. This will not entirely do away with the need of repotting, as the leaf bearing axis tends to grow continually upward and out of the soil, so that occasionally, it would be necessary to reset this main axis into a new pot of the same size as before. At any rate this should obviate the necessity of the very frequent watering ferns often require in the dry air of our steam-heated houses.

BROOKLYN BOTANIC GARDEN.